

ENTREPRENEURIAL BEHAVIOUR OF POLYHOUSE FARMERS IN KERALA

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ABSTRACT

The behaviour of farmers towards entrepreneurship is vital in constructing more precise approach to problems related to farming, especially, in case of protected cultivation like polyhouse farming which demands high end technologies. Though many studies have been done on entrepreneurial behaviour, this is a novel attempt made with reference to the polyhouse farmers in the Thrissur and Palakkad districts of Kerala in the time period of 2017-2019. Primary data was collected from 30 polyhouse farmers through structured interview schedules which covered the selected dimensions of entrepreneurial behaviour. Thorough analysis of data was done using appropriate statistical tools and the conclusions are based on the same. Majority of polyhouse farmers under study showed medium level of entrepreneurial behaviour. Information seeking behaviour, planning ability and innovativeness were found to be the most important dimensions of entrepreneurial behaviour and better educational status of farmers could help them to become above average entrepreneurs. The study also throws light to the relationship of socio-economic characteristics with the overall entrepreneurial behaviour of polyhouse farmers, viz., experience in farming, social participation and extension contact.

KEYWORDS: Entrepreneurial Behaviour, Polyhouse Farming, Information Seeking Behaviour & Planning Ability

Received: Jan 10, 2020; **Accepted:** Jan 31, 2020; **Published:** Mar 17, 2020; **Paper Id.:** IJASRAPR20204

INTRODUCTION

Agricultural production is necessarily an outcome of interaction among inputs. There has to be judicious use of land, seeds, fertilizers etc in order to make farming sustainable and profitable. Kerala, being a smaller state has 94 per cent of its total land holding as marginal land (Franco, 2013). The unpredictable fluctuations in weather patterns have turned the plight of farmers bitter with huge crop losses. It is thus, the need of the hour is to devise and practice novel methods of input efficiency and weather resistant farming.

The idea of polyhouse or protected cultivation where the technology of precision farming and regulation of weather parameters are combined effectively could be adopted as a viable method of farming in Kerala. In the last decade, many conventional farmers as well as young entrepreneurs have taken up polyhouse farming, both as a commercial activity for steady income as well as for household consumption of safe to eat food. The hi-tech agriculture scheme launched in Kerala during 2012 aimed at promoting protected cultivation across the state. As a subset of this scheme, a flagship scheme was introduced by State Horticulture Mission which provided subsidy up to 75 per cent of unit cost for its beneficiaries. A good number of farmers have utilized these benefits to start polyhouse farming. However, there exists diverse opinion on the success of polyhouse farming in Kerala. The study aimed at throwing light on to the entrepreneurial behaviour of polyhouse farmers in Kerala which would have

significant contribution in its success.

METHODOLOGY

Research Design

In the present research, Ex-post facto research design was used. Ex-post facto design is any systematic empirical investigation in which the independent variables have not been directly managed because they have already happened or because they are inherently not manageable (Robinson, 1976).

Location of the Study

Thrissur and Palakkad districts were purposively selected for the study as these were the districts where polyhouse farming was highly promoted in Kerala.

Sample Size and Sampling Technique

Multistage sampling was adopted as the sampling procedure. Polyhouse farmers who were functional for at least two years were selected. Four blocks from each of the two districts were selected for the study due to higher proportion of polyhouse farmers in these blocks. Thirty polyhouse famers were randomly selected from the two districts. Out of the total respondents, 15 were from Palakkad and 15 were from Thrissur.

Data Collection

Primary data was collected from the respondents using structured interview schedule which consisted of suitable statements on different dimensions of entrepreneurial behaviour and other variables.

Measurement of Entrepreneurial Behaviour

The entrepreneurial behaviour of polyhouse farmers was quantified as the Entrepreneurial Behaviour Index, which is a composite index of nine dimensions of entrepreneurial behaviour. The dimensions of entrepreneurial behaviour as per Ahuja (2016) viz., innovativeness, decision making ability, achievement motivation, risk taking ability, planning ability, leadership ability, cosmo politeness, self-confidence, information seeking behaviour were adopted for the study. Each of these variables were measured using different scales, Gulabsinh (2016), Rao (2013), Barik (2013), Supe (1969), Patel *et al.* (2014), Nandapurkar (1981), Patel *et al.* (2014), Heartheton and Polivey (1991), Barik (2013) respectively.

The respondents were asked to rate the statements representing selected dimensions with scores of 1, 2 and 3, which was reversed for negative statements. The total score of each statement was used to calculate the index of each statement, The following formula was used for calculating the index:

$$\text{Index of each statement} = \frac{\text{total score of each statement}}{\text{maximum score of each statement}} \times 100$$

$$\text{Composite index} = \frac{\sum X}{M \times N \times S}$$

$\sum X$ = sum of total scores of all statements

M = Maximum score

N = Number of respondents

S = Number of statements

Socio Economic and Personal Variables used in the Study

The selected independent variables were age, education, farming experience, size of land holding, annual income, social participation, mass media contact and extension contact. These variables were measured using appropriate scales.

Statistical Tools used in the Data Analysis

Arithmetic mean, standard deviation frequency distribution and percentages were used to know the distribution pattern of respondents according to variables.

Kendall's Rank Correlation Coefficient

It is a measure of at least ordinal level of association between two series of variables. Every subject is assigned a rank and 'T' will be a measure of the degree of association or correlation between the two sets of ranks. Here, it was used to study the association between the entrepreneurial behaviour of polyhouse farmers and their socio-economic and personal characteristics.

Kruskal – Wallis One Way Analysis of Variance by Ranks

The Kruskal-Wallis one way analysis of variance by ranks is used to determine whether 'k' independent samples are from different populations for at least ordinal level of measurements. Here, it was used to study the group variability among different categories with respect to socio economic and personal characteristics of the farmers.

Binary Logistic Regression

Many social phenomena are qualitative rather than quantitative in nature. In a binary discrete phenomena, the nature of an event occurs usually takes the form of a dichotomous variable. Logistic regression analyses the relationship between multiple independent variables. The responsible variable 'Y' is a dichotomous variable with possible values '0' and '1'. In the study, it was used to analyse the probability of a below average entrepreneur to become an above average entrepreneur.

RESULTS AND DISCUSSIONS

Socio-Economic and Personal Profile of Polyhouse Farmers in Kerala

About 3.30 per cent of the polyhouse farmers belonged to the young age category (Up-to 35 years), while 63.40 per cent of the farmers belonged to middle age category (36 to 50 years) and 33.30 per cent belonged to the old age category (Above 50 years). It was evident that majority of the polyhouse farmers were middle aged and least number of farmers fell into young age category. The likely reason for majority of respondents to be in 36-50 years age category might be that usually farmers of this age would have moderate experience in farming and had more work competence than older and younger ones. Further, middle aged farmers could bear more family responsibility. The results are in line with the findings of Gulabsinh (2016) and Naik (2017).

Half of the polyhouse farmers had secondary and higher secondary level of education, followed by 40 per cent who were at graduation level, while only 6.70 per cent belonged to the post graduate level and a mere 3.30 percent in the primary level of education. This shows that a fair level of education among farmers opens up new doors for making economic profits and also for finding subsidiary occupations. The results are on par with the findings of Barik (2013) and Nargave (2016).

Half of the respondents had lower level (up to 5 years) of farm experience and 50 per cent had medium level (6 to 15 years) of farm experience. The probable reason for low to medium level of experience might be that polyhouse farming had gained focus only in the recent years in Kerala and people might have had an initial inhibition to take it up as a method of farming. Most of the polyhouse farmers started polyhouse farming as a part of the SHM scheme in 2011-2012. The results are in agreement with that of Barik (2013).

Hundred per cent of the polyhouse farmers had marginal land holding (up to 2.5 acres). Most of the farmers constructed polyhouse in the backyard of their house, so that they could undertake farming along with their non-farm activities. Highly fragmented nature of land holding in Kerala could be a reason. The results are on par with the findings of Patilet *et al.* (2014).

It was found that 50 per cent of polyhouse farmers had medium level (Rs 350000 to 700000) of annual income followed by 26.70 per cent with low annual income (up to Rs 350000) and 23.30 per cent had high annual income (above Rs 700000). The probable reason for majority of respondents having medium to high level of annual income might be due to their moderate educational status enabling them to find subsidiary occupation to support farming. The results are in agreement with the findings of Naik (2017).

About 53.30 per cent had moderate level of social participation, while 40 per cent had low social participation and 6.70 per cent had good social participation. The probable reason for moderate social participation may be due to their moderate educational status and most of the farmers had access to towns that facilitated connections with various social organizations by which they interact with each other. The results are on par with the findings of Krishnan (2017) and Ramlakshmidieviet *et al.* (2013).

It could be observed that almost half of the polyhouse farmers had medium level of mass media contact, while 43.30 per cent had high level of mass media contact and 10 per cent had low level of mass media contact. The probable reason might be that good number of farmers had secondary and above level of education and most households had televisions, radio or newspapers which enabled them to utilize various mass media. The results are in conformity with the findings of Sreeram (2013).

It was evident from the result that 56.70 per cent of the polyhouse farmers had medium level of extension contact, while 26.70 per cent had low level and 16.60 per cent had high level of extension contact. The likely reason for such a result could be that the respondents had a fair level of education and were aware of the benefits of having close contact with extension agency. The results are on par with the findings of Patel *et al.* (2014).

Dimensions of Entrepreneurial Behaviour of Hi-Tech Farmers

Table 1: Overall Entrepreneurial Behaviour of Polyhouse Farmers

Sl. No	Dimensions	Polyhouse Farmers	
		Index	Rank
1	Decision making ability	63.06	6
2	Achievement motivation	62.50	7
3	Risk taking ability	66.11	4
4	Planning ability	70.28	2
5	Leadership ability	63.33	5
6	Cosmopoliteness	59.26	9
7	Self-confidence	60.74	8

8	Information seeking behaviour	70.74	1
9	Innovativeness	67.78	3
Composite Index		64.87	

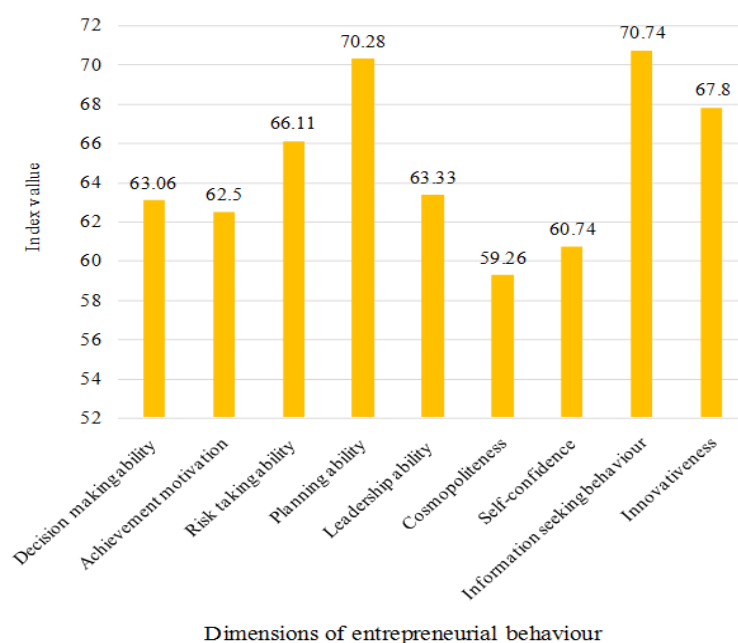


Figure 1: Dimensions of Entrepreneurial Behaviour of Polyhouse Farmers

The result in table 1 showed that the entrepreneurial behavior for polyhouse farmers was indicated with a composite index of 64.87. Among the listed nine dimensions, information seeking behaviour gained the highest index for polyhouse farmers. Information seeking was vital as it connected the farmers to the updates in the marketing and technological aspects. The finding goes in line with the result of other factors such as better level of extension and mass media contact along with better educational status. It was found that planning ability ranked second for polyhouse farmers. Planning was very crucial for scheduling the farm activities and allocation of finance. The result could be attributed to relatively better educational status of the farmers, which might have helped them in planning. The results showed that cosmopoliteness and self-confidence ranked the least among the dimensions of entrepreneurial behaviour. The probable reason for weak cosmopoliteness might be that the farmers did not take part in trainings and discussions on a regular basis. They were often reluctant to participate in field trips and visits. Low self-confidence could be due to low profit from farming and less technical knowledge.

Analysis of the overall entrepreneurial behavior of polyhouse farmers showed that majority (63.30%) of them farmers had medium level of entrepreneurial behaviour, followed by 20 per cent of them had high and 16.70 per cent had low level of entrepreneurial behaviour. It was observed that all the nine dimensions selected were medium among polyhouse farmers. This could be the reason for such a result. The results are on par with the findings of Mertiya (2017).

Distribution of Polyhouse Farmers with respect to various Dimensions of Entrepreneurial Behavior-

Decision Making Ability

Slightly more than half, (53.30 %) of the polyhouse farmers belonged to the medium level of decision making ability, while 26.70 per cent had low and 20 per cent had high decision making ability. The probable reason for such result could

be the inability of the polyhouse farmers to take decisions at a rational level due to their medium to low social participation and medium level of extension contact. More or less similar results were reported by Porchezhiyan *et al.* (2016).

Achievement Motivation

Slightly more than half (53.30%) of the respondents had medium level of achievement motivation, while 26.70 per cent had low level of achievement and only 20 per cent belonged to the category of high level of achievement motivation. The likely reason for the result might be that the polyhouse farmers were gratified with whatever profits they had and they were not aiming at profit maximization.

Risk Taking Ability

A majority (63.40 %) of polyhouse farmers showed medium level of risk taking ability, while 26.50 per cent had low and 10.10 per cent had high level of risk taking ability. The probable reason for such a result could be that the polyhouse farming had gained popularity only in the recent years and thus farmers were unlikely to take risks without proper guidance and knowledge, which could probably result in loss of money and time. Further, the polyhouse farmers did not have ample income from farming and were not ready to take more risks by investing more time and money in farming.

Planning Ability

Seventy per cent of polyhouse farmers had medium level of planning ability while 26.70 per cent had high and a mere 3.30 per cent had low level of planning ability. The likely reason for the result could be that the polyhouse farmers had a fair education level to plan the farming activities in advance, to avoid any kind of unforeseen risks. The moderate level of extension contact might have helped them to plan in consultation with other farmers and officers. The results are on par with the findings of Turker and Seleck (2009).

Leadership Ability

Sixty per cent of the polyhouse farmers had medium level of leadership ability, while 23.30 per cent had high and 16.70 per cent had low level of leadership ability. The likely reason for the result might be that the polyhouse farmers had fair education level to manage different activities. This could help them in securing efficient output and to achieve the task. Similar results have been reported by Lawrence and Ganguly (2012).

Cosmopolitaness

A majority (66.70%) of the polyhouse farmers had medium level of cosmopolitaness, while 23.30 per cent had high and 10 per cent had low level of cosmopolitaness. The result might be because of the fair extension contact, mass media contact and social participation of the polyhouse farmers that helped them to have a consistent interaction with people of different social strata. More or less similar results were reported by Ahuja *et al.* (2016).

Self-Confidence

Sixty per cent of the polyhouse farmers had medium level of self-confidence while, 23.30 per cent had low and 16.70 per cent had high self-confidence. The reason for low to medium confidence could be due to the lack of technical knowledge in polyhouse cultivation and low profits in farming. The results are in conformity with the findings of Gulabsinh (2016).

Information Seeking Behaviour

Almost 73.30 per cent of polyhouse farmers had medium level of information seeking behaviour while, 20 per cent had high and only 6.70 per cent had low level of information seeking behaviour. The medium to high level of information seeking behaviour could be due to the fact that majority of polyhouse farmers had moderate contact with formal sources such as extension officers and they found it easier to access different kinds of services from government and SAUs. The farmers found it necessary to seek information on production and marketing aspects from different sources. The results are on par with the findings of Jaisridhare *et al.* (2012).

Innovativeness

Level of innovativeness among polyhouse farmers was found to be at medium level. Results showed that half of the respondents showed medium level of innovativeness, 26.70 per cent showed high level of innovativeness and 23.3 per cent showed lower level of innovativeness. The probable reason could be that the polyhouse farmers were careful about trying new practises and they chose to avoid venturing to risks. Similar results have been reported by Patel *et al.* (2014) and Naik (2017).

Factors Affecting the Entrepreneurial Behaviour of Farmers

The relationship between the entrepreneurial behaviour and socio-economic and personal characteristics of the polyhouse farmers viz, age, farm experience, annual income, education, size of the land holding, social participation, mass media contact and extension contact were studied. The results are shown in the table 2.

Among polyhouse farmers, experience, social participation and extension contact had a positive and significant relationship with the overall entrepreneurial behaviour of the farmers. Whereas all other independent variables did not show any correlation. The result could be because the farmers with longer years of experience would have ease in farming and marketing, which helped to reap profits. Social participation and extension contact was crucial in the information seeking and cosmopolitaness of the farmers. With greater social participation and extension contact, they could get up to date information and ideas on novel practices.

Table 2: Factors Affecting the Entrepreneurial Behaviour of Polyhouse Farmers

Sl. No	Profile Characteristic	Correlation Co-Efficient
1	Age	--0.049
2	Experience	0.360*
3	Income	-0.046
4	Size of the land holding	0
5	Education	0.170
6	Social participation	0.389*
7	Mass media contact	0.087
8	Extension contact	0.429*

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2 –tailed).

Within Group Variability among Polyhouse Farmers

The within group variability among socio-economic and personal variables were found out by Kruskal-Wallis test by taking the nine dimensions of entrepreneurial behaviour as the dependent variable.

The results in table 3 revealed that they had a significant variability among different categories with respect to the self-confidence of the farmers. The significant increase in self-confidence with age might be due to higher experience in farming and marketing. It was also found that, there was a significant variability among different classes of education with respect to innovativeness of polyhouse farmers, this might be because, higher the education, farmers would be able to connect with different kinds of people and institutions to get ideas on new practices and implement them on field. Education brought greater exposure and willingness to try differently.

Table 3: Within Group Variability Among Polyhouse Farmers

Sl. No	Socio-Economic and Personal Variables	Dimensions of entrepreneurial behaviour								
		D1	D2	D3	D4	D5	D6	D7	D8	D9
1	Age	2.85	2.44	1.75	1.03	2.02	1.03	8.04*	4.84	1.75
2	Experience	1.66	1.90	1.51	3.74	1.93	3.84	2.36	2.77	3.48
3	Size of land holding	0	0	0	0	0	0	0	0	0
4	Annual income	0.44	1.87	2.67	1.32	1.83	2.70	3.29	3.10	1.61
5	Education	3.32	0.98	1.37	1.88	0.64	2.94	1.98	1.02	10.00*
6	Social participation	2.46	1.03	1.69	2.92	0.09	0.49	1.52	1.26	2.79
7	Mass media contact	4.80	0.12	0.01	0.16	0.007	0.72	0.60	0.35	0.44
8	Extension contact	2.28	1.16	2.48	0.81	0.28	0.002	7.25	0.94	0.02

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2 –tailed).

#D1- decision making ability, D2-achievement motivation, D3-risk taking ability, D4-planning ability,D5- leadership ability, D6-cosmopoliteness, D7-self-confidence,D8-information seeking behaviour, D9-innovativeness.

Odds to be an above Average Entrepreneur

Binary logistic regression was performed to find the probability of farmers to be an above average entrepreneur.

Table 4: Odds to be above Average Entrepreneur for Polyhouse Farmers

Sl. No	Variables	B	Standard Error	Exp B (Odds ratio)	Probability
1	Age	-0.47	0.96	0.62	0.39
2	Experience	1.06	0.97	2.89	0.74
3	Income	0.17	0.76	0.84	0.45
4	Size of land holding	-0.99	0.81	1.39	0.58
5	Education	0.33	0.98	2.71*	0.73
6	Social participation	1.01	0.86	0.36	0.26
7	Mass media contact	0.42	0.77	1.51	0.60
8	Extension contact	1.38	3.13	0.25	0.20

* Correlation is significant at the 0.05 level (2-tailed).

The results in table 4 revealed that odds ratio for education is significant. The sample of polyhouse farmers were already having 0.5 probability to become an above average entrepreneur. The calculated value of probability showed that if the level of education is raised to next higher level, there will be a probability of 0.23 for the farmer to become an above average entrepreneur. The probable reason could be that, if the farmers acquire higher levels of education, farmers would be better informed and self-confident in their occupation.

CONCLUSIONS

Majority of the polyhouse farmers showed medium level of entrepreneurial behaviour in all the selected nine dimensions. The overall entrepreneurial behaviour was also found to be at medium level. Information seeking behaviour, which is the

contact of farmers with various information sources and planning ability were the dimensions having higher indices while cosmopolitaness and self-confidence gained lower indices. Information seeking was vital as it connected the farmers to the market updates and other technological sources. Planning was very crucial for scheduling the farm activities and allocation of finance. The major socio- economic and personal characteristics affecting entrepreneurial behaviour of polyhouse farmers were experience, social participation and extension contact. Farmers with better experience in farming might be more efficient and profit makers. Social participation and extension contact helps the farmers to reach out to novel ideas and practices in and out of their locality. The three categories of farmers, young, middle age and old age showed considerable variation in their self-confidence, while different categories of education showed variation with respect to their innovativeness and thus contributing to their entrepreneurial behaviour.

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